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No. IV.

GUN-CARRIAGE FOR NAVAL USE, AND
JOINTED RAMROD.

The LARGE SILVER MEDAL was this session presented to Mr. W. PRINGLE GREEN, Lieut. R. N., for his GUN-CARRIAGE AND JOINTED RAMROD FOR NAVAL USE. The following communication has been received from the candidate, and models of his inventions have been placed in the Society's repository.

By the present mode of fighting a cannon on board ship, the apparatus to each consists of two side-tackles, for the purpose of running out the gun after it has been fired and reloaded, a train-tackle, a rammer and sponge attached to one handle, a rammer and worm to a second, a rope rammer and sponge, and a crow-bar and handspike. There is also a ladle to every fourth gun, for the purpose of drawing out the shot when the powder does not ignite owing to the gun being wet, or foul on the inside.

The before-mentioned apparatus lumbers the deck ; and by the present mode of working, seven, nine, thirteen, or more men are required to each, according to their calibre : this prohibits the merchant shipping from fighting all their broadside-guns, and from carrying one or more heavy cannon, by which they could in many instances disable the ship chasing them, and thereby escape capture ; and when

several vessels are in company at sea, or in an exposed harbour, could form a formidable battery, bidding defiance to the attacks of privateers and row-boats.

The sponging and loading a long gun with the present unwieldy staff is both a dangerous and difficult task, and not at the most favourable time to be accomplished without great danger of the men performing that duty being killed or wounded, owing to extending their bodies out of the port-hole to enable them to manage the staff. It is also difficult to load a gun when fighting, on the lee-side of a low vessel, or on the lower deck of a line of battle ship; at such times, should the rammer-head be entered in the gun, and the ship roll, the sponge is unavoidably plunged into the sea, and if the staff escape being broken, it is rendered useless until the sponge is washed and wrung, and the gun is then to be sponged with a wet sponge, which is often a dangerous experiment, nor is there any means to put on a clean one; many staffs are broken, when plunged into the sea, from the velocity of a ship through the water, and many are also dragged out of the men's hands and totally lost.

In running out a gun by the side-tackles, it seldom occurs when it is out, that it points to the object, owing to its not being possible to equalize the exertions of the men at the two tackles, and from the pitching motion of the ship throwing the gun out of its place; the crow-bar and hand-spike are then to be resorted to, to train it, which operation necessarily occupies much time, and often, while performing, the opportunity of firing is altogether lost; much time is also spent in coiling down the side-tackle-falls, which at all times requires great attention, and much caution when the guns are fired, to prevent the men from

entangling their legs, by which many, unaccustomed to a battle, are thus wounded, as also by the staffs being thrown about by the falls when they become entangled together.

By my improved mode, two or four men run a gun out of the port-hole, according to its calibre; and in case of emergency, in small vessels, one man can accomplish this. When a gun is running out, the man holding the trigger-line guides it by the handspike, or other lever, at once to the object, and it is by him instantly fired, without the loss of time in coiling down the side-tackles, the necessary attention to the breeching, and to training the gun.

The breeching checks the gun in its recoil, so that no strain is upon either the axle or rope by which it is run out; and that no accident may occur to the mechanism, when the gun is fired, it is so constructed as to be thrown out of gear at that time. If it should be shot away or broken, any person having a hammer, a spare axle and wheels, can complete the whole; and this accident cannot occur unless a shot passes through the sill of the port and breast-piece of the carriage: such a shot is as likely to disable the guns upon the present as the improved plan.

The improved staff answers the purpose of the four now in use; the one made for experiment for a nine-pounder long gun was of five-eighths round bar iron, nine feet of which weighed nine pounds: this size, though tapered from the centre to the ends, is sufficient to load a thirty-two pounder; the tapering reduces its weight to seven pounds, but the staff may be hollow from the joint to the screw ends. As regards the weight, it would be immaterial were it twice as heavy as those in present use; because, from its construction, its leverage is so much less. The improved staff is jointed in the centre, and has screw-ends for fixing

on the the sponge, the worm, ladle, &c. : this enables the men at every gun to have the whole of their implements at hand without lumbering the decks, and on no occasion to wait one for another, as is now the case ; and if loading a gun upon a lower deck or in a low vessel (particularly on the lee-side, when rolling,) the sponge-head, from the staff being jointed in the centre, can be turned upwards, to prevent it from either dipping into the sea, being broken, or forced out of a man's hand, and there being no lever upon the man, he continues the operation of loading, which he could not do at such times with the long wooden staff. Again, should the sponge become foul or wet, a clean one can be put on at pleasure ; and if a jointed wooden staff, after the proposed plan, be adopted, very considerable expense will be saved, as any piece of wood will then answer the purpose. By the present mode of warfare, the cartridge is flannel ; and if paper be used, a flannel bottom is put to the cartridge, which prevents the necessity of worming so often as was formerly the case ; but if any deem it expedient to worm a gun frequently, a spring wad-hook may be fitted in the sponge-head, so that the gun will be wormed every time it is loaded.

With the improved staff, the man loading has no necessity at any time to expose his body outside the port-hole, as is now the case, as he can with one hand extended easily perform this operation, which his whole exertion could not at such a time accomplish with the present staff.

The improved staff is considerably shorter than those at present in use,—can be speedily turned under the port outside,—also on the inside under the deck,—is handed in and out of the port-hole with the same pliability and facility as a rope one,—consequently one half the time is

gained by this in loading a gun. With one of the improved staffs to each gun, and a few spare ones to each, deck, the many now in use will be rendered unnecessary.

Reference to the figures of Lieut. Green's improved Gun-carriage and Ram-rod.—Plate VII.

FIG. 1. A lateral elevation of the cannon mounted on its carriage.

2. A front elevation of ditto.

3. A section of ditto.

4. A bird's-eye view of the carriage, the gun being dismounted.

a The gun.

b Fig. 1. The port-hole.

c c c Fig. 1. The breeching, secured at one end to a strong eye-bolt driven into the ship's side, then passing through one of the loops in the breast rope *d*, through the ring *e* on the side of the carriage, and the loop *f* at the breech of the gun, whence it passes on the other side of the gun through the other carriage ring, through the other loop in the breast rope, and is finally secured to a strong eye-bolt like the former, fixed on the other side of the port-hole.

g Fig. 1, Is an eye-bolt into which is hooked the rope *h*, figs. 1, 2, 3, 4, which passes round the axle *i*, figs. 2, 4, 5: this axle is toothed at each extremity, as shown more plainly fig. 5.

11 Fig. 5. Two pinions fixed on the axle *m* take into the teeth of the axle *i*, and by means of the power of one or two men applied at each of the winches *n n*, figs. 1, 5, and 4, wind up the rope *h*, and thus bring the gun to the mouth of the port. When this has been done, the axle *m* is to be thrown out of gear by being raised from the bottom of the curved hole *m*, figs. 1 and 3, to the upper extremity of the same, and the winches are to be taken off. The gun being then fixed, unwinds in its recoil the rope on the axle *i*, and is finally stopped by the resistance of the breeching; the winches are then fixed on the axle *m*, and the axle is again brought into gear in readiness for winding the gun to the mouth of the port as soon as it has again been charged.

Fig. 6. A jointed rammer made of wood or of bar iron, either hollow or solid. The ends *o* and *q* may be unscrewed and replaced by the screw *r*, or the scoop *p*.